



Issue Paper

Center for Strategic Leadership,
U.S. Army War College



August 2003
Volume 06-03

THE NATIONAL INFRASTRUCTURE SIMULATION AND ANALYSIS CENTER (NISAC): A New Contributor to Strategic Leader Education and Formulation of Critical Infrastructure Policies and Decisions

By COL William Wimbish and MAJ Jeffrey Sterling

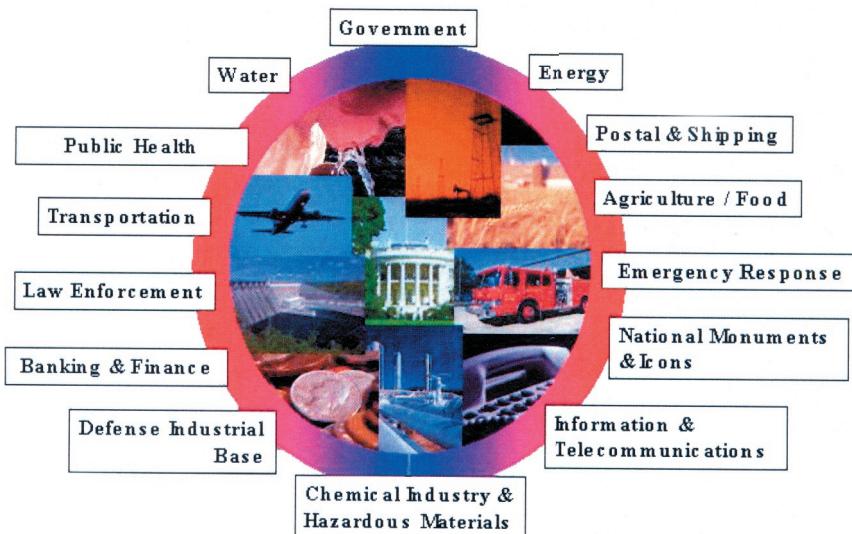


Figure 1. National Critical Infrastructure Assets

The National Infrastructure Simulation and Analysis Center (NISAC):

With the collapse of the World Trade Center Towers, many national policy makers feared the financial markets would follow, causing a cascading breakdown of other critical infrastructure assets. Fortunately, our worst nightmare failed to materialize, but the need to protect and to better understand our nation's critical assets was unmistakable. The clarion from the 9/11 terrorist's attack calls for strategic leaders to understand the complexity, interdependency, and vulnerability of our infrastructure. The National Infrastructure Simulation and Analysis Center (NISAC) provides an unparalleled modeling, simulations, and analysis capability to assist the military's Senior Service College (SSC) community in educating future strategic leaders about the realities of the Nation's infrastructure system and in researching the effects that new government security policies and actions would have on the nation's critical assets and public and private sector services. For example, a policy affecting increased security at all west coast sea ports could have devastating second and third order effects on regional and national commerce, transportation, labor, energy, banking, and so forth; a series of terrorist acts could have similar effects.

Report Documentation Page			<i>Form Approved OMB No. 0704-0188</i>		
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>					
1. REPORT DATE AUG 2003	2. REPORT TYPE	3. DATES COVERED 00-00-2003 to 00-00-2003			
4. TITLE AND SUBTITLE The National Infrastructure Simulation and Analysis Center (NISAC): A New Contributor to Strategic Leader Education and Formulation of Critical Infrastructure Policies and Decisions		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army War College,Center for Strategic Leadership and Development,650 Wright Avenue,Carlisle,PA,17013-5049		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 4	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Complications: Interdependencies and Organizational Boundaries

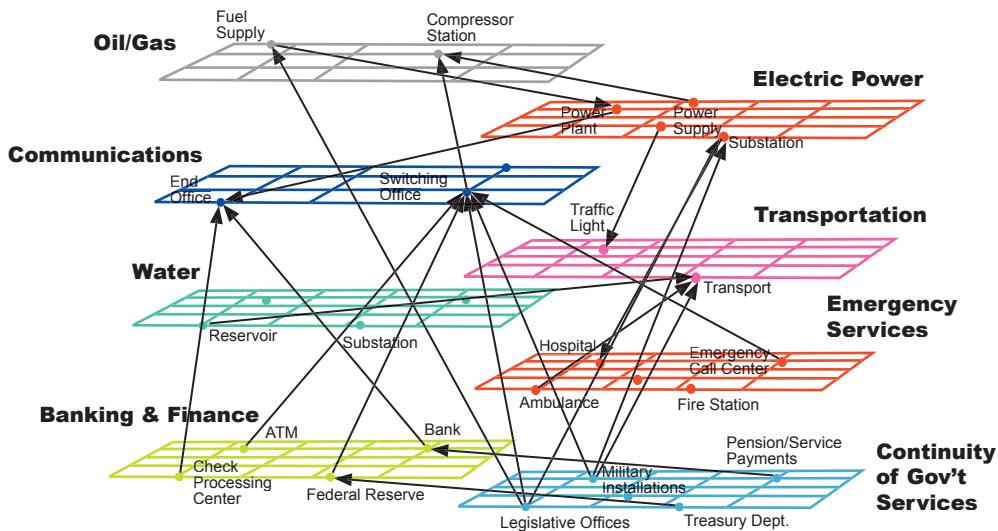


Figure 2. Complications, Interdependencies and Organizational Boundaries of the Nation's Critical Infrastructures

Who is NISAC?

NISAC is based at Sandia National Laboratories and has project operations at Los Alamos as well. The agency leverages a host of capabilities from major academic institutions and DOD contractors. The NISAC has been realigned under the Asset Identification Branch within the Department of Homeland Security (HLS) as of March 1, 2003.

The work of NISAC captures the robustness of our nation's critical infrastructure for the decision makers in the areas of policy analysis, investment and mitigation planning, education and training, and real-time assistance to crisis response organizations. For strategic level education, NISAC can assist the Military's SSCs in three areas:

1. Provide simulations that produce accurate forecasts/outcomes for potential policy and regulatory decisions made during exercises, workshops, and seminars.
2. Produce feasible simulation outcomes to drive realistic exercise scenario development.
3. Support classroom studies on homeland security issues.

Simulations for Student Policy Analysis and Exercise Scenario development

For national or regional level exercises, several NISAC simulations and tools are ideally suited to assist students researching short- or long-term effects of national regulatory laws policies, responses, or actions, exploring infrastructure vulnerabilities or identifying second and third order effects of attacks or disruption. NISAC simulations could also stand as the basis for writing new exercise scenarios by providing a valid and realistic foundation for scenario sequenced or sequel events due to an infrastructure disruption. The results could be incorporated into strategic exercises and senior level experiential learning events such as the U.S. Army War College's annual Strategic Crisis Exercise (SCE).

The NISAC Agent-Based Laboratory For Economics (N-ABLE) has great potential to fulfill these requirements. N-ABLE is a consequence management tool that can provide analysis for the economic play during SCE. The model simulates the microeconomic impact on specific firms, industries or sectors when a disruption or a change in a government policy occurs. Sectors/infrastructure modeled both regionally and nationally are electric power, telecommunications, manufacturing, and transportation. The model can capture the complexities of a single market or an entire economic region.

Supporting Classroom Senior leader Education on Homeland Security Issues

Other NISAC simulations are specifically designed to support small group analysis of “what if” scenarios. Led by the instructor, small groups could discover if they had considered all ramifications of a policy decision or action. By running the group’s policy decision data in simulation, the students could gain a realistic perspective and experience how a policy or action could create unintended consequences. Similar processes could be used to determine critical infrastructure vulnerabilities, interdependencies, and impacts of an attack.

NISAC has several “stand alone” simulations that could be exported to the classroom today. The “California Oil Simulator” and “Portland Oregon Port Simulator” are two infrastructure models ready for the classroom. Both simulators are constructed to promote group discussions and analysis for a specific scenario. For example, if a class is evaluating the strategic impact of a disruption—whether it is a port closure or fuel rationing. Both simulations use a graphical user interface (GUI) that makes setting up the scenario intuitively easy. Each simulation produces comprehensive graphical charts and tables for the group to analyze. Both models are small enough to fit on most current PC desktop and laptop computers.

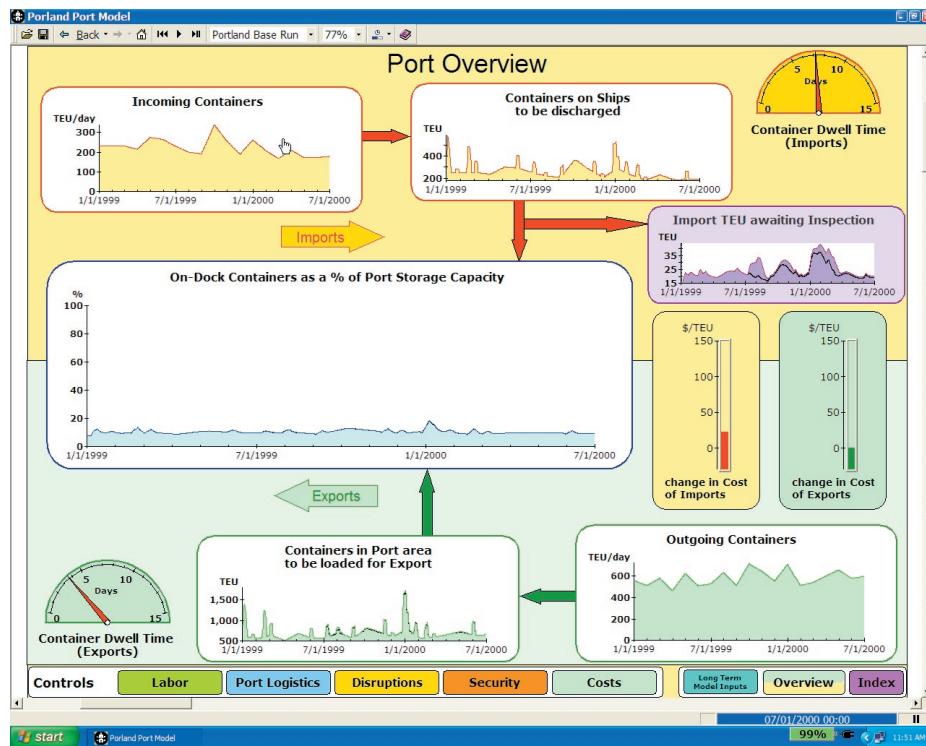


Figure 3. A screen shot of one GUI available in the Oregon Port Simulator

Consequences from Using Higher Scanning and Inspection Rate of imported containers During High Alert and Certain Seasonal Periods at Portland.

The Future

NISAC's analysts are continually enhancing the model's fidelity or tailoring it to study specific issues. Currently, NISAC models focus on local and regional warnings and indicators, interdependencies, cascading effects, impacts, and implications. Most of the data collected to date centers on the west and northwest regions of the United States. Many of the products will be expanded to include other regional and national analytical capabilities. Forging new collaborations with key private sector, academic, and government organizations will mutually benefit NISAC and its partners in providing the nation's current stakeholders and future leaders the most advanced infrastructure interdependency analyses and tools available to address key Homeland Security issues. Now is an optimum time for the Military SSCs and other academic institutions to explore the potential of using NISAC's evolving simulations and modeling to assist classroom and experiential learning.

* * * * *

This publication and other CSL publications can be found online at <http://www.carlisle.army.mil/usacsl/index.asp>.

* * * * *

The views expressed in this report are those of the participants and do not necessarily reflect official policy or position of the United States Army War College, the Department of the Army, the Department of Defense, or any other Department or Agency within the U.S. Government. Further, these views do not reflect uniform agreement among exercise participants. This report is cleared for public release; distribution is unlimited.

RESERVE COMPONENT PORTRAYAL IN ARMY WAR GAMES

OFFICIAL BUSINESS

Carlisle, PA 17103-5049

650 Wright Avenue

Center for Strategic Leadership

U.S. ARMY WAR COLLEGE